

BODY OF ELECTRIC VEHICLE

CROSS-REFERENCE

[0001] This application claims priority to Japanese Patent Application No. 2019-176106 filed on Sep. 26, 2019, the contents of which are hereby incorporated by reference into the present application.

TECHNICAL FIELD

[0002] The technique disclosed herein relates to a body of an electric vehicle. In the disclosure herein, the electric vehicle means a vehicle configured to travel using electric power stored in a battery. The electric vehicle includes electric cars, hybrid cars, fuel cell cars, etc.

BACKGROUND

[0003] Japanese Patent Application Publication No. 2019-038482 describes a body of an electric vehicle. This body includes a floor panel (a front floor panel and a rear floor panel) that constitutes a floor of cabin. A crossmember (which will be termed an indoor crossmember) that protrudes upward from the floor panel and extends in a right-left direction is disposed on an upper surface of the floor panel. A rear crossmember that protrudes downward from the floor panel and extends in the right-left direction is disposed on a lower surface of the floor panel. The rear crossmember is located rearward of the indoor crossmember. A battery case is disposed below the floor panel. The battery case houses a battery configured to supply electric power to a traction motor. The battery case extends from a position located forward of the indoor crossmember to a position that is located rearward of the indoor crossmember and forward of the rear crossmember. Disposing the rear crossmember rearward of the indoor crossmember and permitting the battery case to extend in a space therebetween enables a size increase of the battery case. A capacity of the battery can thereby be increased.

SUMMARY

[0004] In the body of Japanese Patent Application Publication No. 2019-038482, right and left ends of the rear crossmember are connected to a rear side frame (which may be referred to as a rear side member). This structure has room for improvement regarding protection of the battery in the event of a lateral collision to the vehicle.

[0005] A body of an electric vehicle disclosed herein may comprise a floor panel; a pair of rockers extending along both side edges of the floor panel, respectively; an indoor floor crossmember protruding upward from the floor panel and connecting the rockers to each other; an outdoor floor crossmember protruding downward from the floor panel, connecting the rockers to each other, and located rearward of the indoor floor crossmember; and a battery case located below the floor panel and housing a battery configured to supply power to a traction motor. The battery case may extend from a position located forward of the indoor floor crossmember to a position that is located rearward of the indoor floor crossmember and forward of the outdoor floor crossmember.

[0006] In this body, the battery case located below the floor panel extends from a position located forward of the indoor floor crossmember to a position located rearward of the indoor floor crossmember and forward of the outdoor

floor crossmember. This allows the battery case to house a battery with high capacity. Further, in this body, the indoor floor crossmember and the outdoor floor crossmember both connect the rockers to each other. The rockers, the outdoor floor crossmember, and the indoor floor crossmember constitute a frame, and this frame is highly rigid. Thus, if a lateral collision to the vehicle occurs, the frame is less likely to be deformed and deformation of the battery case is thereby mitigated. As such, this body can suitably protect the battery in the event of a lateral collision to the vehicle.

BRIEF DESCRIPTION OF DRAWINGS

[0007] FIG. 1 is a perspective view of a body 10 of an electric vehicle.

[0008] FIG. 2 is a planar view of an underbody from above.

[0009] FIG. 3 is a planar view corresponding to FIG. 2, with reinforcements 60, 62 omitted.

[0010] FIG. 4 is a cross-sectional view of the underbody along a line IV-IV in FIG. 2.

[0011] FIG. 5 is a perspective view of an area around a left reinforcement 60 from obliquely above.

[0012] FIG. 6 is a cross-sectional view of the underbody along a line VI-VI in FIG. 2.

[0013] FIG. 7 is a planar view of the underbody from below.

[0014] FIG. 8 is a cross-sectional view of the underbody along a line VIII-VIII in FIG. 2.

[0015] FIG. 9 is a cross-sectional view of the underbody along a line IX-IX in FIG. 2 (with a battery case 70 omitted).

DETAILED DESCRIPTION

[0016] A traction motor is mounted on an electric vehicle of an embodiment. The electric vehicle travels by having the traction motor driving its wheels. FIG. 1 shows a body 10 of the electric vehicle of the embodiment. The body 10 includes a floor panel 20. The embodiment to be described hereinbelow relates to a rear portion of the floor panel 20 and a surrounding structure around the rear portion. In the drawings including FIG. 1, an arrow FR indicates a front direction of the vehicle, an arrow RH indicates a right direction of the vehicle, and an arrow UP indicates an up direction of the vehicle.

[0017] FIGS. 2 and 3 each show a planar view of an underbody of the body 10 from above. The planar view of FIG. 2 includes reinforcements 60, 62 disposed on the floor panel 20, while the reinforcements 60, 62 are removed in the planar view of FIG. 3.

[0018] As shown in FIGS. 2 and 3, the floor panel 20 includes a front floor panel 20a, a rear floor panel 20b, and a luggage floor panel 20c. From the front to rear of the vehicle, the front floor panel 20a, the rear floor panel 20b, and the luggage floor panel 20c are arranged in this order. Each of the front floor panel 20a, the rear floor panel 20b, and the luggage floor panel 20c consists of a single steel plate (a single plate). A front edge 21 of the rear floor panel 20b is welded to the front floor panel 20a. A rear edge 22 of the rear floor panel 20b is welded to the luggage floor panel 20c. That is, the rear floor panel 20b constitutes a portion of the floor panel 20 between the front edge 21 to the rear edge 22. The front floor panel 20a and the rear floor panel 20b constitute a cabin floor. The luggage floor panel 20c constitutes a luggage space floor.